

**REMARKS**

Claims 1-20 are pending herein. By this Amendment, the specification and claims 5 and 11 are amended.

The attached Appendix includes marked-up copies of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

The amendments to the specification do not introduce new matter. The amendments merely provide a generic term for apparatus exemplified by Coulter counters and correct the indication of trademarks. Claims 5 and 11 are amended solely to clarify the language of the claims. No new matter is introduced.

**I. Restriction/Election**

Applicants hereby affirm election of Group I, claims 1-14. Because Applicants have elected the product claims, Applicants understand that rejoinder will be required when a product claim is found allowable and the withdrawn process claim depends from or otherwise includes all the limitations of an allowed product claim. MPEP §821.04.

In the present application, the method claims of Group II include all of the limitations of the product of Group I. In particular, all of the limitations of the independent product claim 12 of Group I are incorporated into the method of Group II.

Group III is drawn to a method of using the claimed toner. Thus, Group III also includes the limitations of the product claims of Group I, specifically independent claim 12.

Thus, the method claims must be rejoined with the product claims once the product claims are allowed. To streamline prosecution and avoid delay, the Restriction Requirement should be withdrawn to permit concurrent examination of all of the pending claims. Applicant respectfully requests reconsideration and withdrawal of the Restriction Requirement.

The Restriction Requirement is also traversed because the subject matter of Groups I and II and III is sufficiently related that a search of any one group would encompass a search of the

subject matter of the remaining groups. The prior art revealed by a search of the composition of Group I would overlap the prior art revealed by a search of the method of Groups II and III. Thus, although the classifications may be different, the subject matter is sufficiently overlapping that concurrent search of all of the claims does not create a serious burden.

**II. Objection to specification**

The Office Action objects to the specification for the improper use of trademarks. Applicants have reviewed and amended the specification to correctly indicate trademarks, when they are used in the specification. In view of the correction to the specification, Applicants submit that the objection should be withdrawn. Reconsideration and withdrawal of the objection are respectfully requested.

**III. Rejection under §112, Second Paragraph**

Claims 1, 5, 6 and 11-13 are rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Applicants respectfully traverse this rejection.

Specifically, the Office Action rejects claims 1 and 14 for reciting "ratio of an element derived from the releasing agent to the elements on the surface of the toner determined by X-ray photoelectron spectroscopy." Applicants note that claim 14 does not recite the rejected language and does not depend from claim 1. It would appear that the Office Action instead intended claim 12. Applicants' response is based on this understanding of the rejection.

The Office Action asserts that the meaning of the phrase "element derived" is unclear, because it is not clear whether the phrase refers to a group of the releasing agent. In addition, the Office Action asserts that it is also unclear what "the elements on the surface" refers to. Applicants submit that the phrase "element derived," when read in the complete context of the language of the claim (i.e., element derived from the releasing agent), clearly indicates that the elements referred to are the chemical components of the releasing agent. As for the phrase, "elements on the surface of the toner", the claim language is sufficiently clear to

indicate that the phrase refers to all chemical components that form the surface of the toner, including the binder resin and colorant.

In addition, the Office Action rejects claims 5, 6 and 13 because claim 5 recites the terms "Coulter counter." Although it is believed that one skilled in the art would understand that the phrase "Coulter counter" refers to any particle size analyzing apparatus that uses the Coulter principle, the claims and the specification are amended to provide a generic term for the Coulter counter. In view of the amendment of the claims and specification, this basis of the rejection is obviated. Applicants submit that this amendment also obviates the basis for the rejection of claim 13.

Claim 11 is amended to recite proper Markush language, as suggested by the Office Action.

In view of the amendment of claims 5 and 11 and the above remarks, this rejection should be withdrawn. Reconsideration and withdrawal of the rejection are respectfully requested.

#### **IV. Rejection under §102/103**

##### **A. Matsumura, US 6,002,662 (Matsumura '662)**

Claims 1-6 and 8-14 are rejected under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Matsumura '662, combined with the statements made in the specification. Applicants respectfully traverse this rejection.

The Office Action admits that Matsumura '662 fails to teach or suggest that the described toner has the protrusions and amount of releasing agent on the surface of the toner as recited in the instant claims. However, the Office Action asserts that the toner taught by Matsumura '662 would inherently possess these features because the method of making the toner of Matsumura '662 is allegedly similar to the method by which the claimed toner is made.

Applicants respectfully submit that this assertion is based on an incomplete comparison of the cited methods, and thus an incomplete comparison of the toner compositions. Although the process of making the claimed toner appears to be similar to the method described by Matsumura '662, the step that the Office Action refers to as the "heating step (5)" does not correspond to the process for producing the toner particles described in the present specification. Specifically, at col. 21, lines 8-12, Matsumura '662 clearly indicates that an anionic surfactant is added to the dispersion liquid before the contents are heated to 95°C and maintained at that temperature for 5 hours. In contrast, the process described in the instant specification indicates that a "1N sodium hydroxide solution is added to the resulting aggregated particle dispersion," and that this mixture is heated to 98°C and stirred at 98°C for 6 hours (see page 27, lines 15-20). This process difference results in different physical properties of the final toner product.

Clearly, there is a pH adjustment step in the process of making the claimed toner that is absent from the process described by Matsumura '662. The sodium hydroxide is added to maintain a pH of about 6 during the fusing and integration of the particles before the temperature is increased. This softens the surface of the toner sufficiently so that the surface protrusions on the toner particle can be formed. In contrast, Matsumura '662 integrates and fuses the particles using an interfacial agent before increasing the temperature. As such, the surface of the toner remains hard, even at high temperature, and is not sufficiently pliable to generate protrusions on the surface of the particle.

Thus, although parameters such as the temperature and duration of heating may be similar, the reactants are clearly distinct. Clearly, the action and/or reaction of different chemicals under similar conditions cannot be expected to result in the same or even similar products. As such, there is no basis for the assertion that the toner taught by Matsumura '662

would be expected to possess the same or similar properties as the claimed toner. The toner of Matsumura '662, therefore, does not anticipate the claimed invention.

Similarly, the differences in the process of making the claimed toner and the toner taught by Matsumura '662 would not have rendered the claimed toner obvious over the described toner. There is no teaching or suggestion in Matsumura '662 that would have motivated one of ordinary skill in the art to use NaOH in place of an anionic surfactant. Nowhere does the cited reference teach or suggest that the production process could or should be modified in this particular manner, or such a modification would have any desirable effect. Thus, one of ordinary skill in the art would neither have been able to derive the claimed toner based on the teachings of Matsumura '662 nor have been motivated to modify the process of making the toner as taught by Matsumura '662.

Furthermore, the Office Action appears to ignore the ratio limitations between the elements derived from the releasing agent to the elements on the surface of the toner as determined by X-ray photoelectron spectroscopy as being less than 10% by atom. In order to anticipate the claimed invention, the Patent Office must establish that all of the claim limitations are met by the reference. The Patent Office has not met this burden, and thus the rejection must be withdrawn.

For at least these reasons, Applicants submit that claims 1-6 and 8-14 are not anticipated by, nor would have been obvious over, the cited reference. Reconsideration and withdrawal of the rejection are respectfully requested.

**B. Matsumura, US 5,910,389 (Matsumura '389)**

Claims 1-14 are rejected under 35 U.S.C. §102(b) as anticipated by, or in the alternative, under 35 U.S.C. §103(a) as obvious over Matsumura '389, combined with the statements made in the specification. Applicants respectfully traverse this rejection.

The Office Action cites and applies Matsumura '389 in the same manner as Matsumura '662. Matsumura '389 fails to teach or suggest that the described toner has the protrusions and amount of releasing agent on the surface of the toner as recited in the instant claims. Again, the Office Action asserts that the toner taught by Matsumura '389 would inherently possess these features because the method of making the toner of Matsumura '389 is apparently similar to the method by which the claimed toner is made.

As with Matsumura '662, the "heating step (5)" of Matsumura '389 that supposedly corresponds to the process for producing the toner particles described in the present specification occurs after an anionic surfactant is added to the dispersion liquid (see col. 25, lines 58-63 of Matsumura '389). In contrast, the process described in the instant specification indicates that a "1N sodium hydroxide solution is added to the resulting aggregated particle dispersion," and that this mixture is heated to 98°C and stirred at that temperature for 6 hours (see page 27, lines 15-20). This process difference results in different physical properties of the final toner product.

The process of producing a toner described by Matsumura '389, like Matsumura 662, does not include a pH adjustment step. Thus, the problems described with the process of Matsumura '662 remain applicable to the process of Matsumura '389. Applicants respectfully submit that the process of Matsumura '389, like the process of Matsumura '662 would not have been able to soften the surface of the toner particle sufficiently to allow the formation of protrusions on the surface of the particle.

As discussed above, a similarity in reaction conditions used with different reactants cannot be expected to result in the same or even similar products. As such, there is no basis for the assertion that the toner taught by Matsumura '389 would be expected to possess the same or similar properties as the claimed toner. The toner of Matsumura '389, therefore, does not anticipate the claimed invention.

Similarly, the differences in the process of making the claimed toner and the toner taught by Matsumura '389 would not have rendered the claimed toner obvious over the described toner. There is no teaching or suggestion in Matsumura '389 that would have motivated one of ordinary skill in the art to use NaOH in place of an anionic surfactant. Nowhere does the cited reference teach or suggest that the production process could or should be modified in this particular manner, or such a modification would have any desirable effect. Thus, one of ordinary skill in the art would neither have been able to derive the claimed toner based on the teachings of Matsumura '389 nor have been motivated to modify the process of making the toner as taught by Matsumura '389.

Once again, it appears that the Office Action has ignored the limitation regarding the ratio between the elements derived from the releasing agent to the elements on the surface of the toner as determined by X-ray photoelectron spectroscopy as being less than 10% by atom. In order to anticipate the claimed invention, the Patent Office must establish that all of the claim limitations are met by the reference. The Patent Office has not met this burden, and thus the rejection must be withdrawn.

For at least these reasons, Applicants submit that claims 1-6 and 8-14 are not anticipated by, nor obvious over the cited reference. Reconsideration and withdrawal of the rejection are respectfully requested.

**V. Conclusion**

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,



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JAO/SXT:amw

Attachment:  
Appendix

Date: December 12, 2002

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<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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## APPENDIX

## Changes to Specification:

Page 5, line 19-page 6, line 4:

The toner particles may have a surface property index defined by the following equations of approximately 2.0 or less which is measured under the condition of the toner without external additive:

(Surface property index) =

(Measured specific surface area)/(Calculated specific surface area)

(Calculated specific surface area) =

$$6\Sigma(n \times R^2)/(\rho \times \Sigma(n \times R^3))$$

wherein n represents a number of particles in a channel of a particle size analyzing apparatus that uses the Coulter principle, such as a Coulter Counter, R represents a channel particle diameter in the Coulter Counter, and  $\rho$  represents a toner density.

Page 17, line 24-page 18, line 6:

The foregoing materials are dispersed in a ball mill for 5 hours, and 0.4 part by weight of benzoyl peroxide as a polymerization initiator is added thereto to prepare a dispersion. The dispersion is added to 200 parts by weight of water along with 20 parts by weight of calcium carbonate (~~Ruminas~~RUMINAS, produced by Maruo Calcium Co., Ltd.), and the mixture is mixed and dispersed in a round stainless steel flask with a homogenizer (~~Ultra-Turrax~~ULTRA-TURRAX T50, produced by IKA Corp.), and is heated to 85°C over an oil bath for heating under stirring inside the flask, followed by maintaining for 5 hours.

Page 20, lines 1-19

The foregoing components are mixed and dissolved to prepare a solution. A surfactant solution formed by dissolving 6 g of a nonionic surfactant (~~Nonipol~~NONIPOL 400, produced by Sanyo Chemical Industries, Ltd.) and 10 g of an anionic surface active agent (~~Neogen~~NEOGEN SC, produced by Dai-ichi Kogyo Seiyaku Co., Ltd.) in 550 g of ion exchanged water is placed in a flask, and the solution obtained above is dispersed and emulsified therein. The emulsion is slowly stirred over 10 minutes, during which 50 g of ion exchanged water having 4 g of ammonium persulfate dissolved therein is added thereto, followed by substituting with nitrogen. Thereafter, the content of the flask is heated to 70°C over an oil bath under stirring, and the emulsion polymerization is continued for 5 hours to obtain a resin particle dispersion (1). The resin particles are separated from the resin particle dispersion (1) and measured for various characteristics, and it is found that the mean diameter is 180 nm, the glass transition point is 54.5°C, the weight average molecular weight Mw is 38,000, and the number average molecular weight Mn is 10,500.

(Preparation of Pigment Dispersion (1))

Blue pigment (copper phthalocyanine) 50 g

(PB15:3, produced by Dainichiseika Color and Chemicals Mfg Co., Ltd.)

Anionic surfactant 5 g

(~~Neogen~~NEOGEN SC, produced by Dai-ichi Kogyo Seiyaku Co., Ltd.)

Ion exchanged water 200 g

Page 20, line 21-page 21, line 5:

The foregoing components are mixed and dissolved, and the mixture is dispersed by using a homogenizer (~~Ultra-Turrax~~ULTRA-TURRAX, produced by IKA Corp.) and an

ultrasonic wave irradiator, so as to obtain a blue pigment dispersion (1) having a mean diameter of 140 nm.

(Preparation of Releasing Agent Dispersion (1))

Polyethylene wax                      50 g

Polyethylene wax                      50 g

(~~Polywax~~POLYWAX 725, produced by Toyo Petrolight Co., Ltd.)

Anionic surfactant    5 g

(~~Neogen~~NEOGEN SC, produced by Dai-ichi Kogyo Seiyaku Co., Ltd.)

Ion exchanged water   200 g

Page 21, lines 6-10:

The foregoing components are heated to 105°C, and the mixture is dispersed by a homogenizer (~~Ultra-Turrax~~ULTRA-TURRAX T50, produced by IKA Corp.) and is further subjected to a dispersing treatment by a pressure discharge type homogenizer, so as to obtain a releasing agent dispersion (1) having a mean diameter of 170 nm.

(Production of Aggregated Particles)

Page 21, lines 17-25:

The foregoing components are mixed and dispersed in a round stainless steel flask with a homogenizer (~~Ultra-Turrax~~ULTRA-TURRAX T50, produced by IKA Corp.), and is then heated to 50°C over an oil bath for heating under stirring inside the flask. After maintaining at 50°C for 30 minutes, observation with an optical microscope reveals that it is confirmed that aggregated particles having an average particle diameter of about 5.5 µm are formed. 100 g of the resin particle dispersion (1) is gradually added to the resulting aggregated particle dispersion, and the mixture is heated to 52°C by increasing the temperature of the oil bath for heating, followed by maintaining at that temperature for 1 hour, whereby an aggregated particle dispersion is obtained.

Page 25, lines 12-25:

The foregoing components are mixed and dissolved to prepare a solution. A surfactant solution formed by dissolving 6 g of a nonionic surfactant (~~Nonipol~~NONIPOL 400, produced by Sanyo Chemical Industries, Ltd.) and 12 g of an anionic surface active agent (~~Neogen~~NEOGEN SC, produced by Dai-ichi Kogyo Seiyaku Co., Ltd.) in 550 g of ion exchanged water is placed in a flask, and the solution obtained above is dispersed and emulsified therein. The emulsion is slowly stirred over 10 minutes, during which 50 g of ion exchanged water having 4 g of ammonium persulfate dissolved therein is added thereto, followed by substituting with nitrogen. Thereafter, the content of the flask is heated to 70°C over an oil bath under stirring, and the emulsion polymerization is continued for 5 hours to obtain a resin particle dispersion (2). The resin particles are separated from the resin particle dispersion (2) and measured for various characteristics, and it is found that the mean diameter is 160 nm, the glass transition point is 50.5°C, the weight average molecular weight Mw is 55,000, and the number average molecular weight Mn is 10,200.

Page 26, lines 1-5:

(Preparation of Pigment Dispersion (2))

Yellow pigment                      50 g

(PY180, produced by Clariant Japan Co., Ltd.)

Anionic surfactant    4 g

(~~Neogen~~NEOGEN SC, produced by Dai-ichi Kogyo Seiyaku Co., Ltd.)

Ion exchanged water   200 g

Page 26, lines 7-16:

The foregoing components are mixed and dissolved, and the mixture is dispersed by using a homogenizer (~~Ultra-Turrax~~ULTRA-TURRAX, produced by IKA Corp.) and an

ultrasonic wave irradiator, so as to obtain a yellow pigment dispersion (2) having a mean diameter of 185 nm.

(Preparation of Releasing Agent Dispersion (2))

Paraffin wax            50 g

(HNP 0190, produced by Nippon Seiro Co., Ltd.)

Anionic surfactant    5 g

(~~Neogen~~NEOGEN SC, produced by Dai-ichi Kogyo Seiyaku Co., Ltd.)

Ion exchanged water   200 g

Page 26, lines 17-20:

The foregoing components are heated to 90°C, and the mixture is dispersed by a homogenizer (~~Ultra-Turrax~~ULTRA-TURRAX T50, produced by IKA Corp.) and is further subjected to a dispersing treatment by a pressure discharge type homogenizer, so as to obtain a releasing agent dispersion (2) having a mean diameter of 140 nm.

Page 27, lines 3-10:

The foregoing components are mixed and dispersed in a round stainless steel flask with a homogenizer (~~Ultra-Turrax~~ULTRA-TURRAX T50, produced by IKA Corp.), and is then heated to 45°C over an oil bath for heating under stirring inside the flask. After maintaining at 45°C for 30 minutes, observation with an optical microscope reveals that it is confirmed that aggregated particles of about 4 µm are formed. 100 g of the resin particle dispersion (1) is gradually added to the resulting aggregated particle dispersion, and the mixture is heated to 48°C by increasing the temperature of the oil bath for heating, followed by maintaining at that temperature for 1 hour, whereby an aggregated particle dispersion is obtained.

## Changes to Claims:

The following is a marked-up version of the amended claims:

5. (Amended) The toner for developing an electrostatic image as claimed in claim 1, wherein the toner particles have a surface property index of approximately 2.0 or less which is measured under the condition of the toner without external additive, the surface property index being defined by the following equations:

(Surface property index) =

(Measured specific surface area)/(Calculated specific surface area)

(Calculated specific surface area) =

$$6\Sigma(n \times R^2)/(\rho \times \Sigma(n \times R^3))$$

wherein n represents a number of particles in a channel of a ~~Coulter Counter~~particle size analyzing apparatus, which utilizes the Coulter principle, R represents a channel particle diameter in the ~~Coulter Counter~~particle size analyzer, and  $\rho$  represents a toner density.

11. (Amended) The toner for developing an electrostatic image as claimed in claim 1, wherein the releasing agent is selected from the group consisting of polyethylene wax, paraffin wax, Fischer-Tropsch wax and nitrogen containing wax.